

APPLICATION NOTE**Metasys Integrator® Siemens Application**

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Introduction

This document explains Metasys Integrator® Siemens applications. Use this document with the Metasys Integrator unit technical bulletins. For information on Siemens equipment, see Siemens documentation (obtainable from a Siemens representative).

Note: If you use a Universal Packaging Module (UPM) enclosure, you **must** install the Metasys Integrator unit 300 Series in a two high enclosure (EN-EWC25-0) rather than a one high enclosure (EN-EWC13-0) as shown in the figures in this application note.

Application Details

The Metasys Integrator unit allows the following Siemens™ equipment (using SEAbus™ communication) to become an integral part of the Metasys® and Metasys Companion Networks:

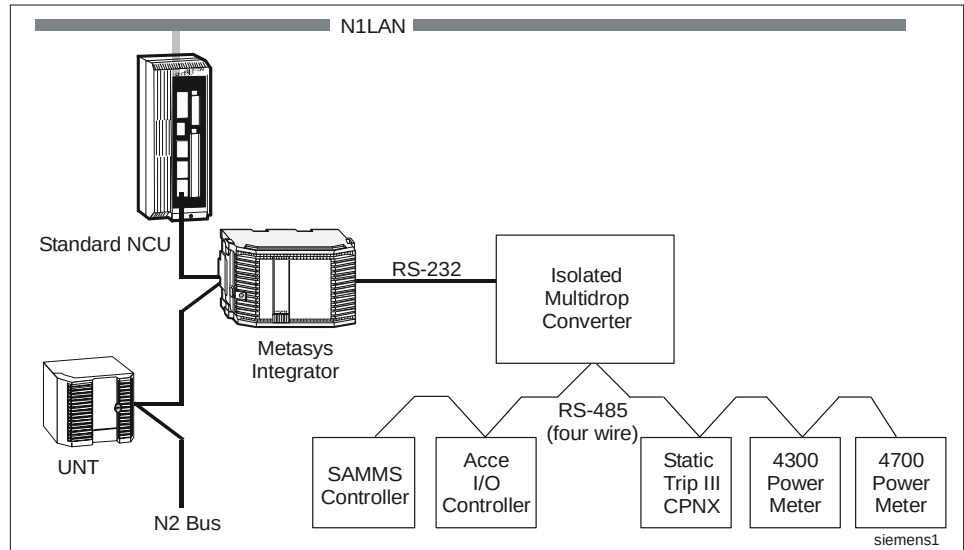
- Model 4300 Power Meters
- Model 4700 Power Meters
- Static Trip III™/CPNX™ Overcurrent Devices
- Siemens Advanced Motor Master System (SAMMS™) Protective Relay
- Access I/O Addressable Relay Controllers

Use the Siemens RS-232 to RS-485 Isolated Multi-Drop Converter (18-658-582-537) to connect to a Metasys or Companion Network via the Metasys Integrator unit. Each of the Siemens devices listed above can be accessed by the full complement of Metasys Building Automation System (BAS) features, including Change-of-State (COS) monitoring, alarm notification, scheduling, trend, and totalization.

The RS-232 to RS-485 converter connects to the integrator unit through the RS-232 port. Once connected, it is the interface between Siemens equipment and non-Siemens devices (such as the Metasys Integrator unit).

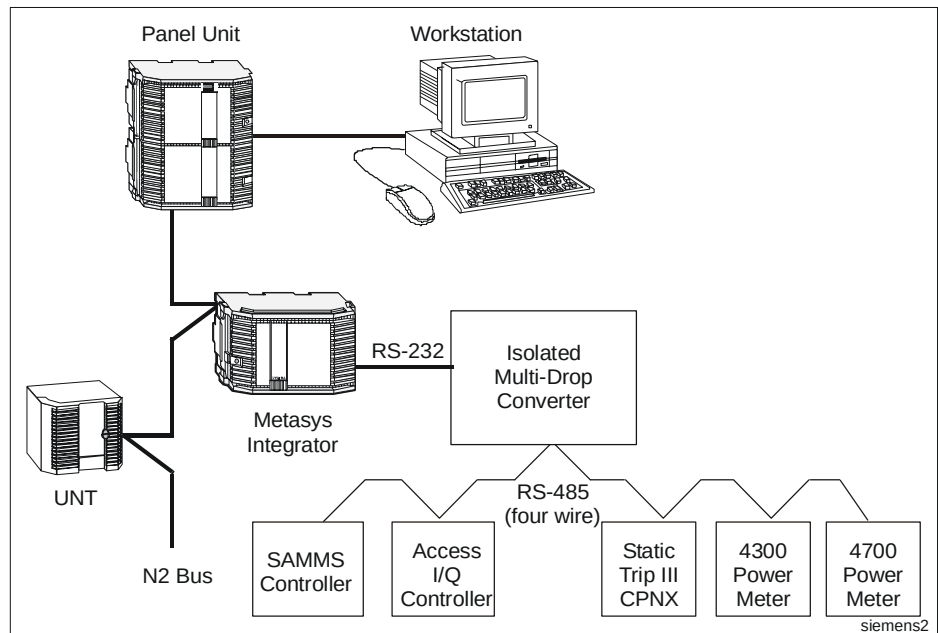
Each Metasys Integrator vendor port can connect to one converter. Each converter can connect up to 128 Siemens devices, which are connected in a daisy-chain configuration. Each Siemens device must be fitted with the proper communications hardware.

Figure 1 shows Siemens and Metasys system integration, and Figure 2 shows Siemens and Metasys system Companion integration, using SEAbus communication.



Note: If you use a UPM enclosure, you **must** install the Metasys Integrator unit 300 Series in a two high enclosure (EN-EWC25-0) rather than a one high enclosure (EN-EWC13-0) as shown in the figures in this application note.

Figure 1: Siemens and Metasys System Integration Using SEAbus Communication



Note: If you use a UPM enclosure, you **must** install the Metasys Integrator unit 300 Series in a two high enclosure (EN-EWC25-0) rather than a one high enclosure (EN-EWC13-0) as shown in the figures in this application note.

Figure 2: Siemens and Metasys Companion Integration Using SEAbus Communication

The Metasys Integrator unit allows the following Siemens equipment (using MODBUS communication) to become an integral part of the Metasys and Metasys Companion Networks:

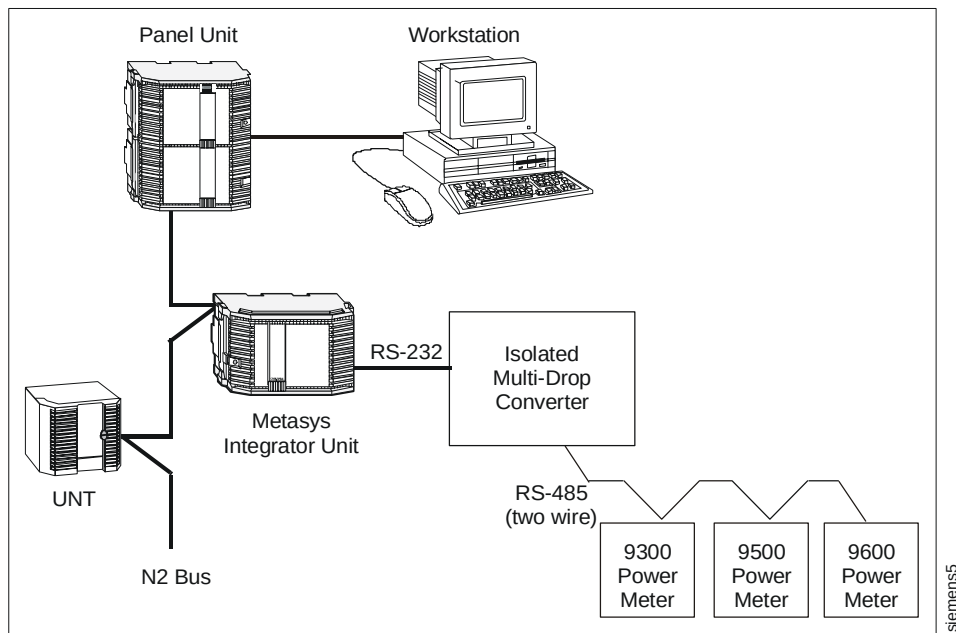
- Model 9300 Power Meters
- Model 9500/9600 Power Meters

Use an RS-232 to RS-485 Isolated Multi-Drop Converter (B&B Electronics Manufacturing Company model 485OTLED recommended) to connect to a Metasys or Companion Network via the Metasys Integrator unit. Each of the Siemens devices listed above can be accessed by the full complement of Metasys BAS features, including Change-of-State (COS) monitoring, alarm notification, scheduling, trend, and totalization.

The RS-232 to RS-485 converter connects to the integrator unit through the RS-232 port. Once connected, it is the interface between Siemens equipment and non Siemens devices (such as the Metasys Integrator unit).

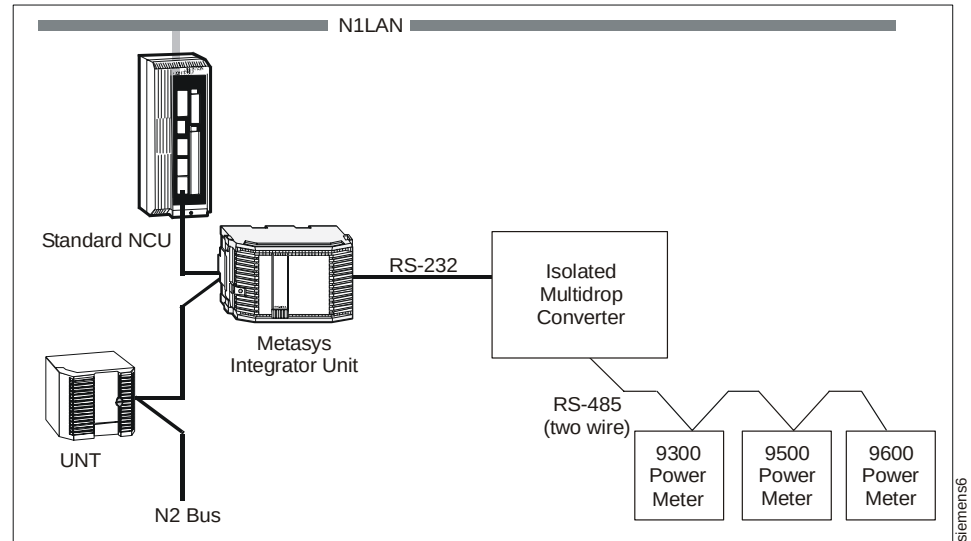
Each Metasys Integrator vendor port can connect to one converter. Each converter can connect up to 31 Siemens devices, which are connected in a daisy-chain configuration. Each Siemens device must be fitted with the proper communications hardware.

Figure 3 shows Siemens and Metasys system integration, and Figure 4 shows Siemens and Metasys system Companion integration.



Note: If you use a UPM enclosure, you **must** install the Metasys Integrator unit 300 Series in a two high enclosure (EN-EWC25-0) rather than a one high enclosure (EN-EWC13-0) as shown in the figures in this application note.

Figure 3: Siemens and Metasys System Integration Using MODBUS Communication



Note: If you use a UPM enclosure, you **must** install the Metasys Integrator unit 300 Series in a two high enclosure (EN-EWC25-0) rather than a one high enclosure (EN-EWC13-0) as shown in the figures in this application note.

Figure 4: Siemens and Metasys System Companion Integration Using MODBUS Communication

Component Requirements

To integrate Siemens SEABus equipment, you need:

- Siemens RS-232 to RS-485 Isolated Multi-Drop converter (18-658-582-537)
- proper Siemens devices and communication hardware
- RS-232 cable for connecting the converter to the Metasys Integrator unit (cable comes with the Siemens converter 18-658-582-537)
- Belden® 8723 or equivalent RS-485 four-wire cable (for connecting the adapter to Siemens devices)
- Metasys Integrator unit
- N2 Bus (for connecting the integrator unit to the Metasys or Companion Network)
- portable Personal Computer (PC) for downloading vendor communication tables (.VCT files) and network setup information into the Metasys Integrator unit, and for running diagnostics
- cable for connecting portable PC to the Metasys Integrator unit
- the correct vendor communication table (.VCT file) to download into the Metasys Integrator unit (supplied on Metasys Integrator unit CD-ROM)

To integrate Siemens MODBUS equipment, you need:

- RS-232 to RS-485 Isolated Multi-Drop converter (B&B Electronics Manufacturing Company model 485OTLED recommended)
- proper Siemens devices and communication hardware
- RS-232 cable for connecting the converter to the Metasys Integrator unit
- Belden 8723 or equivalent RS-485 two-wire cable (for connecting the adapter to Siemens devices)
- Metasys Integrator unit
- N2 Bus (for connecting the integrator unit to the Metasys or Companion Network)
- portable PC for downloading vendor communication tables (.VCT files) and network setup information into the Metasys Integrator unit, and for running diagnostics
- cable for connecting portable PC to the Metasys Integrator unit
- the correct vendor communication table (.VCT file) to download into the Metasys Integrator unit (supplied on Metasys Integrator unit CD-ROM)

This document describes the RS-232 cable and the vendor communication tables. Siemens documentation describes their equipment. The remaining components are described in the Metasys Integrator unit technical bulletins.

**Metasys Network
Release
Requirements**

To integrate Siemens equipment into the Metasys Network, you need:

- Metasys OWS software Release 4.0 or later
- Metasys Integrator unit firmware Release 9.0 or later
- Metasys Integrator unit software Release 9.3 or later

**Metasys
Companion
Release
Requirements**

To integrate Siemens equipment into the Metasys Companion Network, you need:

- Metasys Companion Release 4.0 or later
- Metasys Integrator unit firmware Release 9.0 or later
- Metasys Integrator unit software Release 9.3 or later

Vendor Component Requirements

Integration between the Metasys Integrator unit and Siemens has been tested with the equipment listed in Table 1. Changes to this equipment or integration of Siemens products not discussed in this document requires additional software development and testing by Systems Products. For information on integrating other products, refer to the *Custom Integration* section in this document.

Table 1: Siemens Part and Software Version Numbers

Siemens Product	Firmware Version	Model Number
Model 4300 Power Meter	1.2.1.2 and 1.3.0.0	4300DC
Model 4700 Power Meter	2.3.0.4	4700DRMC
Model 9300 Power Meter	N/A	9300DC
Model 9500 Power Meter	N/A	9500DC
Model 9600 Power Meter	N/A	9600DC
Static Trip III/CPNX Overcurrent Device	2.25	STIII/CPNX
SAMMS Protective Relay	7	SAMMS w/CM1
Access I/O Addressable Relay	7	ACC1 w/CM1
Siemens Isolated Multi-drop Converter	N/A	18-658-582-537

Vendor Contact Information

Siemens Energy and Automation
ACCESS Group
5300 Triangle Parkway, Suite 100
Norcross, GA 30092

Phone: (800) 427-2256
FAX: (800) 428-2480

www.sea.siemens.com/power

The following documents are available from your Siemens representative:

Table 2: Siemens Documentation and Order Numbers

Siemens Product	Order Number
Installing the Access System	SG-6028
4300 Power Meter Instructions	SG-6038
4700 Power Meter Instructions	SG-6018
STIII Instruction Guide	SG-3118-01
SAMMS Technical Manual	CP 3290
SAMMS Custom Software	CP 3291
Isolated Multi-drop Converter	SG-6048

Design Considerations

When integrating Siemens equipment, keep the following considerations in mind:

- Make sure all Siemens equipment is set up, started, and running properly **before** attempting to integrate with the Metasys or Companion Network. (The Siemens representative is responsible for operation of Siemens equipment.)
- Make sure that the Model 9300, 9500, or 9600 Power Meters are configured for MODBUS communication.
- Make sure all Siemens devices, including the Multi-drop Converter, are set to the same baud rate (9600), and that each has a unique communication address. (The Siemens representative is responsible for setting the power meter/overcurrent device baud rate.)
- RS-232 cable distance between the Metasys Integrator unit and the RS-232 to RS-485 converter can be a maximum of 50 feet.
- Cable distance between the converter and the last power meter or overcurrent device can be a maximum of 4000 feet.
- ADF points are internal parameters that cannot be directly mapped to standard Metasys system objects. If you intend to monitor ADF points, you must map them to an attribute in a Control System (CS) object (which can then be mapped to standard Analog Data [AD] objects).

Cable Connections

Cable Pinouts

For SEAbus equipment, use the following cable pinouts for the RS-232 connection between the Metasys Integrator unit and the Siemens converter:

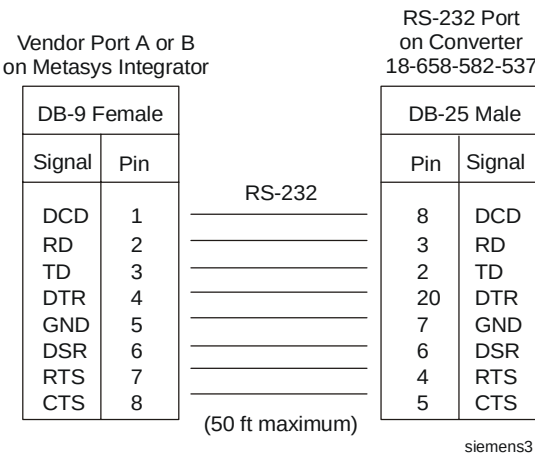


Figure 5: SEAbus Communication Cable Pinouts

For MODBUS equipment, use the following cable pinouts for the RS-232 connection between the Metasys Integrator unit and the RS-232/RS-485 converter:

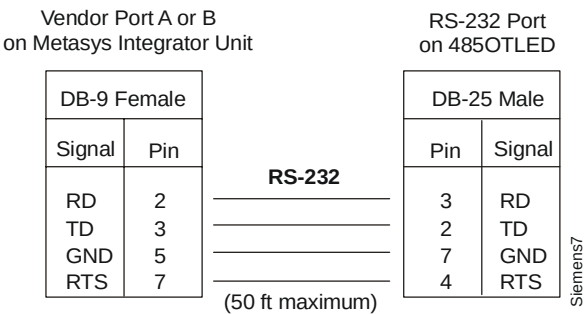


Figure 6: MODBUS Communication Cable Pinouts

On the B&B Model 485OTLED RS-485 converter, set the following switches to the ON position: TERM, 9600, ECHO, 2W, 2W, and RTS.

Connecting the Cable

Connect the female end of the RS-232 cable to either Vendor Port A or Vendor Port B on the Metasys Integrator unit. Connect the male end of the cable to the RS-232 port on the RS-232 to RS-485 converter.

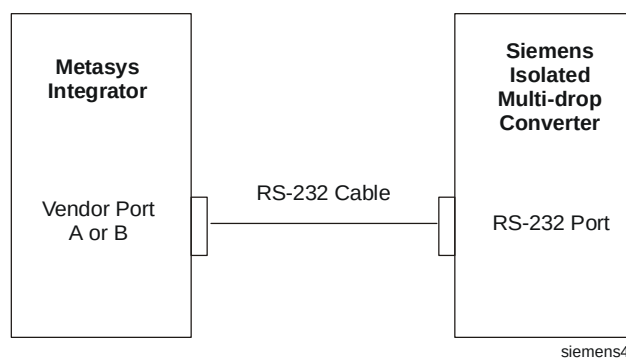


Figure 7: Port-to-Port Connection

Metasys Integrator Unit Setup

To set up the Metasys Integrator unit, you use a portable PC connected to Metasys Integrator Terminal Port. Metasys Integrator unit setup involves:

- downloading the correct vendor communication table (.VCT file)
- setting up the ports
- assigning network addresses to the controllers

The following table provides setup information specific to Siemens applications. For detailed procedures, see the Metasys Integrator unit technical bulletins.

Table 3: Metasys Integrator Unit Setup for Siemens SEAbus Applications

Vendor Communication Table (.VCT File)	
Model 4300 Power Meter	SI_4300.VCT
Model 4700 Power Meter	SI_4700.VCT
Trip III/CPNX	SI_CPX.VCT
SAMMS Protective Relay	SI_SAMMS.VCT
Access I/O Addressable Relay	SI_ACCIO.VCT
Port Setup	
Baud Rate	9600
Word Length	8
Stop Bit	1
Parity	None
Interface	RS-485
Network Setup	
Vendor Address	0-254
Timeout Value	1000 ms
Poll Delay	
Model 4300 Power Meter	110 ms
Model 4700 Power Meter	110 ms
Static Trip III/CPNX	110 ms
SAMMS	110 ms
Access I/O Addressable Relay	110 ms
Performance Guide	
Approximate Scan Time for a Single N2 Address	
Model 4300 Power Meter	1 second
Model 4700 Power Meter	2 seconds
Static Trip III/CPNX	2 seconds
SAMMS	1 second
Access I/O Addressable Relay	1 second

Table 4: Metasys Integrator Unit Setup for Siemens MODBUS Applications

Vendor Communication Table (.VCT File)	
Model 9300 Power Meter	SI_9300m.VCT
Model 9500/9600 Power Meter	SI_9500m.VCT
Port Setup	
Baud Rate	9600
Word Length	8
Stop Bit	1
Parity	None
Interface	RS-485
Network Setup	
Vendor Address	0-255
Timeout Value	1000 ms
Poll Delay	
Model 9300 Power Meter	55 ms
Model 9500/9600 Power Meter	55 ms
Performance Guide	
Approximate Scan Time for a Single N2 Address	
Model 9300 Power Meter	2 seconds
Model 9500/9600 Power Meter	2 seconds

Point Mapping Tables

4300 Power Meter

The following table shows the points available for mapping in the Siemens Model 4300 Power Meter:

Table 5: Siemens 4300 Power Meter

To get the hardware reference for mapping points to CS object attributes (via the software model), combine the NPT (Network Point Type) and NPA (Network Point Address). For example, the hardware reference for the Kilowatt Demand point is AI3.

NPT ¹	NPA ²	Unit	Description
AI	1	%	Power Factor (positive value indicates lagging)
AI	2	kW	Kilowatts (power)
AI	3	kW	Kilowatt Demand
AI	4	kW	Maximum Kilowatt Demand
AI	5	kWh	Kilowatt Hours (net)
AI	6	Volt	Voltage L-L Average
AI	7	Volt	Voltage L-N Average
AI	8	Amps	Average Current
AI	9	MW	Megawatts (power)
AI	10	MW	Megawatt Demand
AI	11	MW	Maximum Megawatt Demand
AI	12	MWh	Megawatt Hours (net)
BO	1		Clear kW Hours ³ 0-N/A, 1-res
BO	2		Reset Max. kW Demand ³ 0-N/A, 1-res
ADF	1	Volt	A-N Phase Voltage
ADF	2	Volt	B-N Phase Voltage
ADF	3	Volt	C-N Phase Voltage
ADF	4	Volt	A-B Line Voltage
ADF	5	Volt	B-C Line Voltage
ADF	6	Volt	C-A Line Voltage
ADF	7	Amps	Phase A Current
ADF	8	Amps	Phase B Current
ADF	9	Amps	Phase C Current
¹ Network Point Type ² Network Point Address ³ Do not map these points to Companion Binary Output (BO) points. If you map these points to Metasys system BO points, make sure the Auto Restore option in the BO object's Definition or Focus window is disabled.			

4700 Power Meter

The following table shows the points available for mapping in the Siemens Model 4700 Power Meter:

To get the hardware reference for mapping points to CS object attributes (via the software model), combine the NPT (Network Point Type) and NPA (Network Point Address). For example, the hardware reference for the Frequency point is AI10.

Table 6: Siemens 4700 Power Meter

NPT ¹	NPA ²	Unit	Description
AI	1	Volt	L-N Average Phase Voltage
AI	2	Volt	L-L Average Phase Voltage
AI	3	Amps	Average Phase Current
AI	4	Amps	Auxiliary Current Input
AI	5	KW	Total kW (power)
AI	6	KVA	Total kVA
AI	7	KVAR	Total kVAR
AI	8	KW	kW Demand
AI	9	%	Power Factor (positive values indicate lagging)
AI	10	HZ	Frequency
AI	11	Volt	Auxiliary Voltage Input
AI	12	Amps	Ampere Demand
AI	13	kWh	kW Hours
AI	14	kWh-R	Reverse kW Hours
AI	15	kQh	kVAR Hours
AI	16	kW	Maximum kW Demand
AI	17	MW	Total MW (power)
AI	18	MVA	Total MVA
AI	19	MVAR	Total MVAR
AI	20	MW	MW Demand
AI	21	MWh	MW Hours
AI	22	MWh-R	Reverse MW Hours
AI	23	MQh	MVAR Hours
AI	24	MW	Maximum MW Demand
BI	1		Setpoint Alarm Condition Exists
BI	2		Relay 1 Status
BI	3		Relay 2 Status
BI	4		Relay 3 Status
BI	5		Status Input S1
BI	6		Status Input S2
BI	7		Status Input S3
BI	8		Status Input S4
BI	9		Diagnostic Failure
1 Network Point Type			
2 Network Point Address			
Continued on next page . . .			

NPT ¹ (Cont.)	NPA ²	Unit	Description
BD	1		Setpoint 1 Status 0-nor, 1-ala
BD	2		Setpoint 2 Status 0-nor, 1-ala
BD	3		Setpoint 3 Status 0-nor, 1-ala
BD	4		Setpoint 4 Status 0-nor, 1-ala
BD	5		Setpoint 5 Status 0-nor, 1-ala
BD	6		Setpoint 6 Status 0-nor, 1-ala
BD	7		Setpoint 7 Status 0-nor, 1-ala
BD	8		Setpoint 8 Status 0-nor, 1-ala
BD	9		Setpoint 9 Status 0-nor, 1-ala
BD	10		Setpoint 10 Status 0-nor, 1-ala
BD	11		Setpoint 11 Status 0-nor, 1-ala
BD	12		Setpoint 12 Status 0-nor, 1-ala
BD	13		Setpoint 13 Status 0-nor, 1-ala
BD	14		Setpoint 14 Status 0-nor, 1-ala
BD	15		Setpoint 15 Status 0-nor, 1-ala
BD	16		Setpoint 16 Status 0-nor, 1-ala
BD	17		Setpoint 17 Status 0-nor, 1-ala
BO	1		Clear kW Hours ³ 0-N/A 1-res
BO	2		Clear kVAR Hours ³ 0-N/A 1-res
BO	3		Reset Maximum Data ³ 0-N/A, 1-res
BO	4		Reset Minimum Data ³ 0-N/A, 1-res
1 Network Point Type 2 Network Point Address 3 Do not map these points to Companion BO points. If you map these points to Metasys system BO points, make sure the Auto Restore option in the BO object's Definition or Focus window is disabled.			
Continued on next page . . .			

NPT¹ (Cont.)	NPA²	Unit	Description
ADF	1	Volt	A-N Phase Voltage
ADF	2	Volt	B-N Phase Voltage
ADF	3	Volt	C-N Phase Voltage
ADF	4	Volt	A-B Line Voltage
ADF	5	Volt	B-C Line Voltage
ADF	6	Volt	C-A Line Voltage
ADF	7	Amps	Phase A Current
ADF	8	Amps	Phase B Current
ADF	9	Amps	Phase C Current
ADF	10	kW	Phase A Kilowatts
ADF	11	kW	Phase B Kilowatts
ADF	12	kW	Phase C Kilowatts
ADF	13	kVA	Phase A kVA
ADF	14	kVA	Phase B kVA
ADF	15	kVA	Phase C kVA
ADF	16	kVAR	Phase A kVAR
ADF	17	kVAR	Phase B kVAR
ADF	18	kVAR	Phase C kVAR
ADF	19	%	Maximum Power Factor
ADF	20	%	Minimum Power Factor
ADF	21	kW	Minimum kW Demand
1 Network Point Type			
2 Network Point Address			

9300 Power Meter, MODBUS Network

To get the hardware reference for mapping points to CS object attributes (via the software model), combine the NPT (Network Point Type) and NPA (Network Point Address). For example, the hardware reference for the Average Current is AI3.

The following table shows the points available for mapping in the Siemens Model 9300 Power Meter:

Table 7: Siemens 9300 Power Meter, MODBUS Network

NPT ¹	NPA ²	Unit	Description
AI	1	Vrms	Voltage LN Average
AI	2	Vrms	Voltage LL Average
AI	3	kVa	Average Current
AI	4	%	Voltage Unbalance
AI	5	%	Current Unbalance
AI	6	Hz	Frequency
AI	7		Real Time Polarity
AI	8	kW	kW Total Demand
AI	9	kVAR	kVAR Total
AI	10	kVA	kVA Total
AI	11	%	Power Factor Signed Average
AI	12	kWh	kWh Total
BO	1		Reset Minimum/Maximum Values 0-N/A, 1-reset ³
BO	2		Energy 0-N/A, 1-reset ³
ADF	1	Volt	Voltage at Phase A
ADF	2	Volt	Voltage at Phase B
ADF	3	Volt	Voltage at Phase C
ADF	4	Volt	Voltage at Phase AB
ADF	5	Volt	Voltage at Phase BC
ADF	6	Volt	Voltage at Phase CA
ADF	7	Amps	Current at Phase A
ADF	8	Amps	Current at Phase B
ADF	9	Amps	Current at Phase C
ADF	10	kW	kW at Phase A
ADF	11	kW	kW at Phase B
ADF	12	kW	kW at Phase C
ADF	13	kVAR	kVAR at Phase A
ADF	14	kVAR	kVAR at Phase B
ADF	15	kVAR	kVAR at Phase C
ADF	16	kVA	kVA at Phase A
ADF	17	kVA	kVA at Phase B
ADF	18	kVA	kVA at Phase C
ADF	19	+/-%	Power Factor Signed A
ADF	20	+/-%	Power Factor Signed B
ADF	21	+/-%	Power Factor Signed C
ADF	22	kWh	kW Total to Date
ADF	23	kVAR	kVAR Total to Date
ADF	24	kVA	kVA Total to Date

1 Network Point Type

2 Network Point Address

3 Do not map these points to Companion BO points. If you map these points to Metasys system BO points, make sure the Auto Restore option in the BO object's Definition or Focus window is disabled.

Continued on next page . . .

NPT¹ (Cont.)	NPA²	Unit	Description
ADF	25	kW	kW Total to Date Maximum
ADF	26	kVAR	kVAR Total to Date Maximum
ADF	27	kVA	kVA Total to Date Maximum
ADF	28	Volts	Voltage LN Average Maximum
ADF	29	Amps	Current Average Maximum
ADF	30	kW	kW Total Maximum
ADF	31	kVAR	kVAR Total Maximum
ADF	32	kVA	kVA Total Maximum
ADF	33	Hz	Frequency Maximum
ADF	34	%	Voltage LN Average Minimum
ADF	35	%	Current Average Minimum
ADF	36	Hz	Frequency Minimum
ADF	37	kWh	kWh Import
ADF	38	kWh	kWh Export
ADF	39	kWh	kWh Net
ADF	40	kVARh	kVARh Import
ADF	41	kVARh	kVARh Export
ADF	42	kVARh	kVARh Total
ADF	43	kVARh	kVARh Net
ADF	44	kVAh	kVAh Total
1 Network Point Type			
2 Network Point Address			

**9500/9600
Power Meter,
MODBUS
Network**

To get the hardware reference for mapping points to CS object attributes (via the software model), combine the NPT (Network Point Type) and NPA (Network Point Address). For example, the hardware reference for the Average Current is AI3.

The following table shows the points available for mapping in the Siemens Model 9500/9600 Power Meter:

Table 8: Siemens 9500/9600 Power Meter, MODBUS Network

NPT ¹	NPA ²	Unit	Description
AI	1	Vrms	Voltage LN Average
AI	2	Vrms	Voltage LL Average
AI	3	kVa	Average Current
AI	4	%	Voltage Unbalance
AI	5	%	Current Unbalance
AI	6	Hz	Frequency
AI	7		Current 4 [14]
AI	8	kW	kW Total
AI	9	kVAR	kVAR Total
AI	10	kVA	kVA Total
AI	11	%	Power Factor Total
AI	12	kWh	kWh Rec
ADF	1	Volt	Voltage at Phase A
ADF	2	Volt	Voltage at Phase B
ADF	3	Volt	Voltage at Phase C
ADF	4	Volt	Voltage at Phase AB
ADF	5	Volt	Voltage at Phase BC
ADF	6	Volt	Voltage at Phase CA
ADF	7	Amps	Current at Phase A
ADF	8	Amps	Current at Phase B
ADF	9	Amps	Current at Phase C
ADF	10	kW	kW at Phase A
ADF	11	kW	kW at Phase B
ADF	12	kW	kW at Phase C
ADF	13	kVAR	kVAR at Phase A
ADF	14	kVAR	kVAR at Phase B
ADF	15	kVAR	kVAR at Phase C
ADF	16	kVA	kVA at Phase A
ADF	17	kVA	kVA at Phase B
ADF	18	kVA	kVA at Phase C
ADF	19	+/-%	Power Factor A
ADF	20	+/-%	Power Factor B
ADF	21	+/-%	Power Factor C
ADF	22	Volts	Voltage LN Average Maximum
ADF	23	Amps	Current Average Maximum
ADF	24	kW	kW Total Maximum
1 Network Point Type			
2 Network Point Address			
Continued on next page . . .			

NPT¹ (Cont.)	NPA²	Unit	Description
ADF	25	kVAR	kVAR Total Maximum
ADF	26	kVA	kVA Total Maximum
ADF	27	Hz	Frequency Maximum
ADF	28	Volts	Voltage LN Average Minimum
ADF	29	Amps	Current Average Minimum
ADF	30	Hz	Frequency Minimum
ADF	31	kW	kW Sliding Window Demand
ADF	32	kVA	kVA Sliding Window Demand
ADF	33	kVAR	kVAR Sliding Window Demand
ADF	34	kW	kW Max Sliding Window Demand
ADF	35	kVA	kVA Max Sliding Window Demand
ADF	36	kVAR	kVAR Max Sliding Window Demand
ADF	37		Phase Reversal Indicator
ADF	38	kWh	kWh Imported (del)
ADF	39	kWh	kWh Total (del + rec)
ADF	40	kWh	kWh Net (del - rec)
ADF	41	kVARh	kVARh Imported (del)
ADF	42	kVARh	kVARh Exported (rec)
ADF	43	kVARh	kVARh Total (del + rec)
ADF	44	kVARh	kVARh Net (del - rec)
ADF	45	kVAh	kVAh Total
ADF	46	%	Maximum Phase A Voltage Total Harmonic Distortion
ADF	47	%	Maximum Phase B Voltage Total Harmonic Distortion
ADF	48	%	Maximum Phase C Voltage Total Harmonic Distortion
ADF	49	%	Maximum Phase A Current Total Harmonic Distortion
ADF	50	%	Maximum Phase B Current Total Harmonic Distortion
ADF	51	%	Maximum Phase C Current Total Harmonic Distortion
1 Network Point Type			
2 Network Point Address			

Static Trip III/CPNX

To get the hardware reference for mapping points to CS object attributes (via the software model), combine the NPT (Network Point Type) and NPA (Network Point Address). For example, the hardware reference for the Maximum Power Factor point is AI15.

The following table shows the points available for mapping in the Siemens Static Trip III/CPNX overcurrent device:

Table 9: Siemens Static TRIP III/CPNX Overcurrent Device

NPT ¹	NPA ²	Unit	Description
AI	1	Hz	Frequency
AI	2	%	Power Factor
AI	3	Amps	Line Amps Average
AI	4	Volt	Voltage L-N Average
AI	5	Volt	Voltage L-L Average
AI	6	kVA	kVA (3-phase)
AI	7	kW	kW (3-phase)
AI	8	kW	kW Demand
AI	9	kWh	kW Hours
AI	10	kWh-R	kW Hours Reverse
AI	11	kVAR	kVAR (3-phase)
AI	12	kQh	kVAR Hours
AI	13	%	Minimum Power Factor
AI	14	kW	Minimum kW Demand
AI	15	%	Maximum Power Factor
AI	16	kW	Maximum kW Demand
BI	1		Setpoint Alarm Condition Exists 0-nor, 1-ala
BI	2		Long-Time Pickup 0-inact, 1-act
BI	3		Current Unbalance Target 0-nor, 1-ala
BI	4		Zone Interlock Out (STPU) 0-inact, 1-act
BI	5		Voltage Unbalance Target 0-nor, 1-ala
BI	6		Ground Fault Target 0-inact, 1-act
BI	7		Short Circuit Target 0-inact, 1-act
BI	8		Long-Time Overload Target 0-inact, 1-act
BI	9		ST Up Disabled Target 0-inact, 1-act
BI	10		Static Trip Reset 0-not res, 1-res
BI	11		ST Local cmd to Trip Breaker 0-inact, 1-act
BI	12		Instantaneous Bypass Trip 0-inact, 1-act
BI	13		Under Voltage Target 0-nor, 1-ala
BI	14		Over Voltage Target 0-nor, 1-ala
BI	15		Under Frequency Target 0-nor, 1-ala
BI	16		Over Frequency Target 0-nor, 1-ala
BI	17		Reverse Power Target 0-nor, 1-ala
1 Network Point Type			
2 Network Point Address			
Continued on next page . . .			

NPT ¹ (Cont.)	NPA ²	Unit	Description
BD	1		Aux Relay Closed 0-false, 1-true
BD	2		OverCurrent Setpoint 0-nor, 1-ala
BD	3		OverGnd Current Setpoint 0-nor, 1-ala
BD	4		OverNeutral Current Setpoint 0-nor, 1-ala
BD	5		Current Unbalance Setpoint 0-nor, 1-ala
BD	6		UnderVoltage Setpoint 0-nor, 1-ala
BD	7		Voltage Unbalance Setpoint 0-nor, 1-ala
BD	8		OverVoltage Setpoint 0-nor, 1-ala
BD	9		OverkW Setpoint 0-nor, 1-ala
BD	10		OverReverse kW Setpoint 0-nor, 1-ala
BD	11		OverkW Demand Setpoint 0-nor, 1-ala
BD	12		OverkVAR Setpoint 0-nor, 1-ala
BD	13		OverkVA Setpoint 0-nor, 1-ala
BD	14		OverFrequency Setpoint 0-nor, 1-ala
BD	15		UnderFrequency Setpoint 0-nor, 1-ala
BD	16		PowerFactor Setpoint 0-nor, 1-ala
BD	17		Breaker Position 0-open, 1-closed
BD	18		Max Data Activity Since Reset 0-false, 1-true
BD	19		Digital Shadow Protection Target 0-inact, 1-act
BD	20		Comm Close Breaker Status 0-inact, 1-act
BD	21		Comm Phase Unbalance Status 0-inact, 1-act
BD	22		Current Unbalance Pickup 0-inact, 1-act
BD	23		Comm Trip Breaker Status 0-inact, 1-act
BD	24		Breaker Failed to Open 0-inact, 1-act
BD	25		Min Data Activity Since Reset 0-false, 1-true
BD	26		Remote Trip 0-inact, 1-act
BD	27		Voltage Unbalance Pickup 0-inact, 1-act
BD	28		Under Voltage Pickup 0-inact, 1-act
BD	29		Over Voltage Pickup0-inact, 1-act
BD	30		Under Frequency Pickup 0-inact, 1-act
BD	31		Over Frequency Pickup 0-inact, 1-act
BD	32		Reverse Power Pickup 0-inact, 1-act
1 Network Point Type			
2 Network Point Address			
Continued on next page . . .			

NPT¹ (Cont.)	NPA²	Unit	Description
BO	1		Clear Min/Max Values ³ 0-N/A, 1-res
BO	2		Clear kW Hours and Reverse ³ 0-N/A, 1-res
BO	3		Clear kVAR Hours ³ 0-N/A, 1-res
BO	4		Clear kW Demand ³ 0-N/A, 1-res
ADF	1	Amps	Line Amps Phase A
ADF	2	Amps	Line Amps Phase B
ADF	3	Amps	Line Amps Phase C
ADF	4	Amps	Line Amps Ground
ADF	5	Amps	Line Amps Neutral
ADF	6	Volt	Voltage L-N Phase A
ADF	7	Volt	Voltage L-N Phase B
ADF	8	Volt	Voltage L-N Phase C
ADF	9	Volt	Voltage L-L (AB)
ADF	10	Volt	Voltage L-L (BC)
ADF	11	Volt	Voltage L-L (CA)
1 Network Point Type 2 Network Point Address 3 Do not map these points to Companion BO points. If you map these points to Metasys system BO points, make sure the Auto Restore option in the BO object's Definition or Focus window is disabled.			

Advanced Motor Master System

The following table shows the points available for mapping in the Siemens Advanced Motor Master System (SAMMS) Protective Relay:

Table 10: SAMMS Protective Relay

To get the hardware reference for mapping points to CS object attributes (via the software model), combine the NPT (Network Point Type) and NPA (Network Point Address). For example, the hardware reference for the Phase Unbalance point is AI11.

NPT ¹	NPA ²	Unit	Description		
AI	1	Amps	Last Trip Current		
AI	2	Hrs	Motor Elapsed Running Time		
AI	3		Number of Motor Starts		
AI	4		Number of Overload Trips		
AI	5	Sec	Time to Restart		
AI	6	%	Thermal Memory		
AI	7	Amps	Phase A RMS Current		
AI	8	Amps	Phase B RMS Current		
AI	9	Amps	Phase C RMS Current		
AI	10	Amps	Ground RMS Current		
AI	11	%	Phase Unbalance		
BI	1		Warning LED Flashing	0-nor,	1-ala
BI	2		Trip LED	0-nor,	1-ala
BI	3		Auto LED	0-man,	1-aut
BI	4		Off LED	0-off,	1-on
BI	5		Hand LED	0-off,	1-on
BI	6		Reverse/High/Left LED	0-N/A,	1-rev
BI	7		Forward/Low/Right LED	0-N/A,	1-fwd
BI	8		Motor Command Condition	0-sto,	1-sta
BI	9		Remote Input 1 (120 VAC)	0-off,	1-on
BI	10		Remote Input 2 (120 VAC)	0-off,	1-on
BI	11		Remote Input 3 (120 VAC)	0-off,	1-on
BI	12		Remote Input 4 (120 VAC)	0-off,	1-on
BI	13		120 VAC Output 1	0-off,	1-on
BI	14		120 VAC Output 2	0-off,	1-on
BI	15		120 VAC Output 3	0-off,	1-on
BD	1		Ground Fault Flashing LED	0-nor,	1-ala
BD	2		External Trip Flashing LED	0-nor,	1-ala
BD	3		Phase Unbalance Flashing LED	0-nor,	1-ala
BD	4		Overload Trip Flashing LED	0-nor,	1-ala
BD	5		Impending Trip Flashing LED	0-nor,	1-ala
BD	6		Ground Fault LED	0-nor,	1-ala
BD	7		CPU Fault LED	0-nor,	1-ala
BD	8		External Trip LED	0-nor,	1-ala
BD	9		Phase Unbalance LED	0-nor,	1-ala
BD	10		Overload Trip LED	0-nor,	1-ala
BD	11		Incomplete Sequence LED	0-nor,	1-ala
BD	12		Impending Trip LED	0-nor,	1-ala
1 Network Point Type					
2 Network Point Address					
Continued on next page . . .					

NPT¹ (Cont.)	NPA²	Unit	Description
BO	1		Pushbutton No. 1 ³ 0-N/A, 1-off
BO	2		Pushbutton No. 2 ³ 0-N/A, 1-for
BO	3		Pushbutton No. 3 ³ 0-N/A, 1-rev
BO	4		Pushbutton No. 4 ³ 0-N/A, 1-hand
BO	5		Pushbutton No. 5 ³ 0-N/A, 1-off
BO	6		Pushbutton No. 6 ³ 0-N/A, 1-auto
BO	7		Pushbutton No. 7 ³ 0-N/A, 1-reset
1 Network Point Type 2 Network Point Address 3 Do not map these points to Companion BO points. If you map these points to Metasys system BO points, make sure the Auto Restore option in the BO object's Definition or Focus window is disabled.			

Access I/O Addressable Relay

To get the hardware reference for mapping points to CS object attributes (via the software model), combine the NPT (Network Point Type) and NPA (Network Point Address). For example, the hardware reference for the Remote Input 3 point is BI3.

The following table shows the points available for mapping in the Siemens Access I/O Addressable Relay:

Table 8: Siemens Access I/O Addressable Relay

NPT ¹	NPA ²	Unit	Description
BI	1		Remote Input 1 (120 VAC) 0-off, 1-on
BI	2		Remote Input 2 (120 VAC) 0-off, 1-on
BI	3		Remote Input 3 (120 VAC) 0-off, 1-on
BI	4		Remote Input 4 (120 VAC) 0-off, 1-on
BI	5		120 VAC Output 1 0-off, 1-on
BI	6		120 VAC Output 2 0-off, 1-on
BI	7		120 VAC Output 3 0-off, 1-on
BI	8		CPU Fault LED 0-nor, 1-ala
BO	1		Pushbutton No. 1 ³ 0-N/A, 1-off
BO	2		Pushbutton No. 2 ³ 0-N/A, 1-for
BO	3		Pushbutton No. 3 ³ 0-N/A, 1-rev
BO	4		Pushbutton No. 4 ³ 0-N/A, 1-hand
BO	5		Pushbutton No. 5 ³ 0-N/A, 1-off
BO	6		Pushbutton No. 6 ³ 0-N/A, 1-auto
BO	7		Pushbutton No. 7 ³ 0-N/A, 1-reset
¹ Network Point Type ² Network Point Address ³ Do not map these points to Companion BO points. If you map these points to Metasys system BO points, make sure the Auto Restore option in the BO object's Definition or Focus window is disabled.			

Metasys Network Setup

Metasys Network Setup is described in the Metasys Integrator unit technical bulletins. This section contains details specific to Siemens applications.

Mapping to a CS Object

Table 9: Software Model and CS Object Definition

Application	Software Model (on <i>Tables and Models</i> CD-ROM)	Display Attribute (recommended)	NT Command Attribute (recommended)
Model 4300 Power Meter	SI_4300.DDL	AI2	BO1
Model 4700 Power Meter	SI_4700.DDL	AI5	BO1
TRIP III/CPNX Overcurrent Device	SI_CPX.DDL	AI8	BO2
SAMMS Protective Relay	SI_SAMMS.DDL	BI2	BO1
Access I/O Addressable Relay	SI_ACCIO.DDL	BI1	BO1
Model 9300 Power Meter	SI_9300m.DDL	AI1	BO2
Model 9500/9600 Power Meter	SI_9500m.DDL	AI1	AI1*
* For the NT Command attribute, use the same attribute as the Display attribute. However, since the points are not commandable, you are not able to command the attribute. (This must be defined because the NT Command attribute cannot be null.)			

Custom Integration

For information on integrating products that are not discussed in this document, first refer to the *Metasys Compatible Products* online list of released connectivity products. If this list does not provide the information you require, consider using the Systems Integration Services (SIS) *Request Custom Engineered Solutions* process to request a custom contract from the System Integration Team.

Access both the *Metasys Compatible Products* and the *Request Custom Engineered Solutions* process from *The Advisor* by performing the following steps:

1. Click on the Products Focus link, located at the top of *The Advisor* home page.
2. Under Products, click on the *Systems Integration Services* link.
3. For the searchable database, click on *Metasys Compatible Products*.
4. Select *Metasys Compatible Products Database*.
5. Click *Online Search Tool*.
6. After the search is completed, return to the *Systems Integration Services* home page as instructed in Steps 1-2.
7. Select *Custom Engineered Solutions* to view the process used for requesting all types of SIS engineered solutions and services.
8. Select *Requesting an Engineered Solution or Service*.
9. Click *Online Request Page*.

If you need further assistance, contact the Johnson Controls® Field Support Center.



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